REMARKS

Claims 1-21 are currently pending in this application.

I. Formal Matters.

Applicant thanks the Examiner for returning the initialled Forms PTO-1449 that were appended to the Information Disclosure Statements (IDS) submitted on August 2, 2001, July 1, 2004, and March 7, 2005. Applicant also thanks the Examiner for indicating that the drawings filed with the subject application papers on October 19, 2004, are acceptable.

II. Claims.

The Examiner rejects claims 1, 19 and 20 under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. More specifically, the Examiner cites "VPI/VCI on a cell header" as present in claim 1, but lacking in the specification (OA page 2).

Applicant asserts control information comprising VPI/VCI in a cell header in and ATM cell is an industry standard.[1] The ATM cell is the basic unit of information transfer in the B-ISDN ATM communication. The cell is comprised of 53 bytes, where five of the bytes make up the header field. The header field is divided into GFC, *VPI, VCI* , PT, CLP and HEC fields. A number of VPI/VCI values are reserved for various protocols or functions all pertaining to different types of control functions and therein VPI/VCI is control information by industry

[1] "The ATM cell is the basic unit of information transfer in the B-ISDN ATM communication. The cell is comprised of 53 bytes. *Five of the bytes make up the header field* . . . ". "The header field is divided into GFC, *VPI, VCI* , PT, CLP and HEC fields. The role of the VPI/VCI fields is to indicate Virtual Path or Virtual Channel identification numbers, so that the cells belonging to the same connection can be distinguished." http://ntrg.cs.tcd.ie/undergrad/4ba2/atm/ATMCell.html

standards.[2] Therein, withdrawal of the rejection of claim 1 as failing to comply with the written description requirement under 35 U.S.C. §112, first paragraph is asserted as being proper and is respectfully requested.

Claims 19 and 20 are herein amended to more particularly claim the invention and require "ONU" instead of "ONT". Therein, withdrawal of the rejection of claims 19 and 20 as failing to comply with the written description requirement under 35 U.S.C. §112, first paragraph is asserted as being proper and is respectfully requested.

The Examiner rejects claims 1, 2, and 9 as being anticipated by ITU G.983.1 [1998] (http://crewman.uta.edu/~basu/5347spring2003/PON.pdf) (*ITU*) under 35 U.S.C. §102(b).

Claim 1. The Examiner cites to section 8.3.5.8, page 41 as disclosing the required subject matter of " . . . wherein said *switching redirects* the transmission of a failing line and does not disturb the transmission to ONUs having satisfactory transmission" (OA page 3). Turning to section 8.3.5.8, ITU teaches that "if no acknowledge is received, the OLT detects the LOAi state *and deactivates* the ONU. One of ordinary skill in the art would readily recognize the patentably distinguishing difference between *deactivating* and *redirecting transmission*. Therein *ITU* fails to disclose redirecting the transmission of a failing line and not disturbing the transmission to ONUs having satisfactory transmission.

The Examiner also cites page 106, section IV,2 and Fig. IV.1 as disclosing the identified required subject matter and asserts that protection switching at the VP/VC level is different from

[2] http://www.protocols.com/pbook/atm.htm#VPI/VCI

switching physical lines and as a result ONUs with nonfaulty VP/VCs are not affected by the protection switching. Turning to page 106, section IV.2, ITU discloses automatic and forced protection switching. ITU teaches that loss of frame, fault detection, or signal degradation can trigger switching. Switching determined by administrative or maintenance events is also disclosed. Both types of protection switching are taught as optional functions (*ITU* page 106). However, *ITU fails to disclose* that protection switching *does not disturb* the transmission of ONUs having satisfactory transmission. One of ordinary skill in the art would readily recognize that different protection schemes are possible, and that not disturbing the transmission of satisfactory ONUs is not an inherent component of all protection schemes and further that disclosing "protection switching" does not infer only affecting the faulty ONU. *ITU* fails to disclose " . . .redirecting the transmission of a failing line and not disturbing the transmission to ONUs having satisfactory transmission." At least for this deficiency the rejection of claim 1 as being anticipated by ITU under 35 U.S.C. §102(b) should be withdrawn.

Claim 9. The Examiner fails to fully answer the arguments traversing the rejection of claim 9 filed August 22, 2005 since new grounds of rejection are not applied to claim 9 (OA page 12). Proper and full consideration of the arguments traversing the rejection of claim 9 is respectfully requested (MPEP §707.7(f)).

ITU discloses, "PON selection trace (PST) messages include K1/K2 bytes...". Further, a line identifier defines the PST message. (*ITU* page 41). A line identifier is assigned to each transmitter based on the interconnection scheme of the OLT and ONUS, in turn each OLT and

each ONU has its own line identifier. The line identifier *is sent to both* the OLT and the ONU, *where the line identifier is checked* for compliance. If the received line number differs from its own line identifier *an alarm is generated.* (*ITU* page 41 section 8.3.5.9).

In contrast, claim 9 requires, loading switch controlling information to K1/K2 byte areas of a PLOAM cell for *a monitor*, wherein switching control information includes values of line numbers, 0/1, *and switching* (a relevant VP or VC) *on the basis of said switch controlling information. ITU* teaches that line identifiers are checked at an OLT and an ONU. In turn, an alarm is generated, or an operator is notified, of a mismatch. *ITU* fails to disclose a switching condition of a duplex model, wherein *switching is performed* not only on K1/K2 bytes, but also on a line number (0/1). At least for failing to disclose, "...loading switch controlling information to K1/K2 byte areas of a PLOAM cell for *a monitor*, wherein switching control information includes values of line numbers, 0/1, *and switching* (a relevant VP or VC) *on the basis of said switch controlling information*," the rejection of claim 9 as being allegedly anticipated by *ITU* under 35 U.S.C. §102(b) should be withdrawn.

Claim 2 is asserted as being allowable at least by virtue of its dependence upon an allowable claim.

The Examiner rejects claims 5 and 6 as being unpatentable over *ITU* under 35 U.S.C. §103(a).

Claim 5. The Examiner acknowledges that *ITU* fails to "explicitly show" a selector at the ONU for selection of one of two signals present on the ONU line termination devices. Therein,

the Examiner asserts that it would have been obvious to one of ordinary skill in the art to have a selector at the ONU to provide selection of the appropriate one of two lines based on the switching information "to obtain the active signaling." (OA page 5).

However, *ITU* teaches away from selecting at the ONU by specifically teaching selection *at the OLT* in a Duplex system model (page 106; Figl. IV.1). More particularly, *ITU* teaches selecting of a signal at page 109 section IV.3.2, at page 106, and as "VP/VC switch" in Fig IV.2:(c). Further, *ITU* teaches *four* possible duplex ATM-PON configurations (Figs. IV a)-d); pages 108-109; page 107). In these four possible configurations *ITU* teaches doubling components from optical fibers, to ONUs, and further to OLTs but fails to teach or suggest *a selector at the ONU* for selecting one of two signals present on terminated lines (page 107).

ITU teaches that failure at any point can be recovered by switching to the standby facilities, and that "full duplex costs" enable high reliability (page 107 (C)). *ITU* specifically addresses the costs of creating a duplex system, and teaches switching capability to respond to failure at any point, through the VP/VC switch at the OLT. A selector at the ONU is not obvious to one of ordinary skill in the art at least because a selector increases component costs and increases system complexity. Furthermore, *ITU* teaches away from the addition of the ONU selector by teaching multiple duplex configurations wherein high reliability it achieved through switching at the OLT.

In contrast, Applicant claims selecting a signal present on two line termination devices, wherein said two line termination devices are in an ONU (claim 5). Primary reference *ITU*

teaches away from a selector at the ONU and the Examiner fails to provide a motivation to modify the disclosure in *ITU* to obtain the subject matter required by claim 5, therefore a prima facie case of obviousness is not established. At least for this deficiency, the rejection of claim 5 as being unpatentable over *ITU* under 35 U.S.C. §103(a) should be withdrawn.

Claim 6 is asserted as being allowable at least by virtue of its dependence upon an allowable claim.

The Examiner rejects claims 3, 4, 7, 8 and 10-18 under 35 U.S.C. §103(a) as allegedly being unpatentable over *ITU* (http://crewman.uta.edu/~basu/5347spring2003/PON.pdf) in view of *Klink*et al.(U.S. Patent No. %,706,277). Applicant respectfully traverses this rejection in view of the following remarks.

Claim 3. The Examiner acknowledges that *ITU* fails to disclose that K1 or K2 bytes are loaded with SC (switch confirmation requirement) and SR (switch requirement) signals by the OLT. Therein the Examiner relies on *Klink* to teach this subject matter. More specifically, the Examiner cites to *Klink* at col. 1, lines 31-38, which teaches conventional transmission devices of synchronous digital hierarchy, which use the K1/K2 process bi-directionally between two terminals. K1 and K2 bytes are exchanged [transmitted] 2 or 3 times (OA page 6; *Klink* col. 1, lines 31-41). *Klink* teaches a decreased changeover duration by limiting the bi-directional switching to a single information transmission (col. 1, line 64 to col. 2, line 4). *Klink* fails to teach or suggest that switch requirement and switch confirmation signals are loaded into "unused K1 or K2 bytes".

In contrast, Applicant claims an OLT which loads switch confirmation requirement and switch requirement signals into unused K1 or K2 bytes. (claim 3). *ITU* fails to teach suggest an OLT which loads "switch confirmation requirement" into unused K1 or K2 bytes and secondary reference *Klink* fails to make up this deficiency. At least for failing to teach or suggest the element of an OLT which loads switch confirmation requirement and switch requirement signals into unused K1 or K2 bytes alone or in combination, the alleged obviousness of claim 3 over *ITU* in view of *Klink* under 35 U.S.C. §103(a) should be withdrawn.

Claim 8 contains an element analogous to that identified in the traversal of claim 3, above. Accordingly, the arguments presented for the allowability of claim 3 are asserted for the allowbility of claim 8.

At least for failing to teach or suggest the element of an OLT which loads switch requirement and switch confirmation signals into unused K1 or K2 byte of a message area, individually or in combination, the alleged obviousness of claim 8 over *ITU* in view of *Klink* under 35 U.S.C. §103(a) should be withdrawn.

Claims 17 and 18. The Examiner asserts that *ITU* teaches the element of deciding necessity of switching *at the ONU* at page 41, sections 8.3.5.9; page 60, "PST message"; page 106, section IV.2; Fig. IV.1; page 107, section IV.3.1; and page 109, Fig. IV.2(c) (OA page 10). *ITU* teaches the decision to switch at the ONU is made at the OLT, and specifically teaches selection *at the OLT* in a Duplex system model (page 106; Figl. IV.1). More particularly, *ITU*

teaches selecting of a signal at page 109 section IV.3.2, at page 106, and as "VP/VC switch" in Fig IV.2:(c). *ITU* teaches away from deciding the necessity of switching at the ONU.

Furthermore, *ITU* teaches *four* possible duplex ATM-PON configurations (Figs. IV a)-d); pages 108-109; page 107). In these four possible configurations *ITU* teaches doubling components from optical fibers, to ONUs, and further to OLTs but fails to teach or suggest deciding the necessity of switching at the ONU, providing such capability at an ONU (page 107). The Examiner relies on *ITU* to teach deciding the necessity of switching at the ONU (required by claims 17 and 18) analogous to the reliance on *ITU* to teach a selector at the ONU (required by claim 3). As shown above, *ITU* fails to teach or suggest making the decision to switch at the ONU, where *ITU* teaches making the decision to switch at the OLT.

Secondary reference *Klink* teaches multiple exchanges of K1/K2 bytes, but fails to teach or suggest deciding the necessity of switching at the ONU.

In contrast applicant claims localized switching decisions, wherein deciding the necessity of switching is made at an ONU, then switching confirmation reply signals are transmitted to the OLT. *ITU* and *Klink*, neither individually nor in combination, teach or suggest the element of deciding the necessity of switching at the ONU. At least for this deficiency, the alleged obviousness rejection over *ITU* in view of *Klink* under 35 U.S.C. §103(a) of claims 17 and 18 should be withdrawn.

Dependent claims 4, 7, and 10-16 are asserted to be in condition for allowance at least for depending from an allowable independent claim.

Claims 19 and 20 are as being allowable having overcome the rejection under 35 U.S.C. §112, first paragraph according to the discussion above.

The Examiner rejects claim 21 under 35 U.S.C. §103(a) as being allegedly unpatentable over *ITU* in view of *Harstead* et al. (U.S. Patent No. 6,327,400).

Claim 21. The Examiner acknowledges that *ITU* fails to teach or suggest switching output lines by an optical switch provided at an output to an ONU side of said optical coupler, and therein relies on *Harstead* to teach this subject matter (OA page 11). *Harstead* teaches an optical switch upstream from *a terminal* and downstream from an optical coupler (Fig. 11; col. 7, lines 50-55). *Harstead* fails to teach switching in relation to an ONU and an optical coupler as required by claim 21[3].

In contrast, claim 21 requires, an optical switch provided at the *output to [upstream from] an ONU side* of an optical coupler. *ITU* and *Harstead*, alone or in combination, fail to teach or suggest an optical switch provided at the output to an ONU side of an optical coupler. At least for this deficiency the rejection of claim 21 as being unpatentable under 35 U.S.C. §103(a over *ITU* in view of *Harstead* should be withdrawn.

In view of the preceding amendments and remarks, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby earnestly solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or

[3] *ITU* at page 5 *disclosing* ONU and Termination devices.

telephonic interview, he is kindly requested to contact the undersigned agent at the local telephone number listed below.

The USPTO is directed and authorized to charge all required fees (except the Issue/Publication Fees) to our Deposit Account No. 19-4880. Please also credit any over-payments to said Deposit Account.

Respectfully submitted,

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